

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT


(PCT Article 36 and Rule 70)

09/937406

REC'D 16 JUL 2001

WIPO

PCT

Applicant's or agent's file reference PJS/P7688WO		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP00/02578	International filing date (day/month/year) 23/03/2000	Priority date (day/month/year) 24/03/1999	
International Patent Classification (IPC) or national classification and IPC B01J19/00			
Applicant TORSANA BIOSENSOR A/S et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 12 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input checked="" type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 17/10/2000		Date of completion of this report 16.07.2001	
Name and mailing address of the international preliminary examining authority  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized officer Stevnsborg, N Telephone No. +31 70 340 3019	



**INTERNATIONAL PRELIMINARY  
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International application No. PCT/EP00/02578

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-47 as originally filed

**Claims, No.:**

1-18 as originally filed

**Drawings, sheets:**

1/12-12/12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

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- ☐ the drawings, sheets:
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*
6. Additional observations, if necessary:

## III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application.
- ☒ claims Nos. 18.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the said claims Nos. 18.
2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

## IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.

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- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☒ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☐ not complied with for the following reasons:
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-17.

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	5-7; 13-17
	No:	Claims	1-4, 8-12
Inventive step (IS)	Yes:	Claims	5-7; 13-17
	No:	Claims	1-4, 8-12
Industrial applicability (IA)	Yes:	Claims	1-17
	No:	Claims	

### 2. Citations and explanations **see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

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see separate sheet

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**Re Item I**

Basis of the opinion

1. Reference is made to the following documents:

D1: WO-A-98/10267

D2: Gert Blankenstein & Ulrik Darling Larsen, Biosensors & Bioelectronics, Vol. 13, no. 3-4, pp. 427-438, 1998 (XP700154)

D3: EP-A-916 396 (& US-A-5 412 087, cited in the application)

**Re Item III**

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. As the applicant has not had a search report drawn up for the second invention mentioned under **Item IV**, the application will be prosecuted on the basis of the invention in respect of which a search has already been carried out (**invention I**). The applicant should therefore limit the application to the invention searched and excise those parts of the application relating to the other invention.

**Re Item IV**

Lack of unity of invention

1. The International Examining Authority has noted the objections put forward in the applicant's letter of 25.05.2001 regarding lack of unity.

However, the applicant fails to comment on the fact that the main feature of the alleged **invention I** is the **hydrodynamic focussing** of a liquid stream between two guiding streams whereas the main feature of the alleged **invention II** is the **electrodynamic focussing** of a liquid stream between two oppositely charged driving electrodes.

These methods constitutes two entirely different physical principles. Moreover, it shall be repeated here that the common technical problem to be solved by the independent claims is the focusing of a liquid stream and the production of an interaction on a

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selected region of a target surface which *a priori* is not novel but known in the art, e.g. from the document WO-A-9810267 (=D1) (cited in the application).

Therefore, the International Examining Authority maintains its objection that unity of invention is lacking between the **groups I** and **II** of alleged inventions according to **point 2** below.

2. The International Examining Authority agrees with the objection put forward by the International Search Authority as to lack of unity (Rule 13 PCT), the reasons being as follows:

The separate groups of invention are:

- I. Claims 1-17: method and apparatus for producing an interaction between a hydrodynamically focused liquid and a selected region of a target surface.
- II. Claim 18: method for producing an interaction between an electrodynamically focused liquid and a selected region of a target surface.

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

Independent claim 1 relates to a method for producing an interaction between a hydrodynamically focused liquid and a selected region of a target surface, comprising the hydrodynamic focusing of a liquid between two streams of guidance liquids and interaction of the hydrodynamically focused liquid and the target surface.

Independent claim 14 relates to a method for producing an interaction between hydrodynamically focused liquids and a selected region of a target surface, comprising the hydrodynamic focusing of a first liquid between two streams of guidance liquids and carrying out a first interaction of the first hydrodynamically focused liquid at a first target surface followed by the hydrodynamic focusing in a crossing flow path of a second liquid between two streams of guidance liquids and carrying out a second interaction of the second hydrodynamically focused liquid at a second target surface which intersects the first target surface.

Independent claim 16 relates to an apparatus suitable for use in the methods of claims 1 or 14.

Independent claim 18 relates to a method for producing an interaction between an electrodynamically focused liquid and a selected region of a target surface, comprising the electrodynamic focusing of a liquid between two streams of guidance liquids and interaction of the electrodynamically focused liquid and the target surface.

The common technical problem to be solved by the independent claims is the focusing of a liquid stream and the production of an interaction on a selected region of a target surface. This is a priori not novel but known in the art, e.g. from the document WO-A-9810267 (=D1) (cited in the application).

Moreover, the independent claims present two different non-connected solutions to this common technical problem.

Independent claims 1, 14 and 16: hydrodynamically focusing a liquid stream by the use of two guidance streams, one on each side of the liquid stream.

Independent claims 18: electrodynamically focusing a liquid stream by the use of oppositely charged electrodes.

The general problem solved by the independent claim 1, i.e. to produce interaction between a hydrodynamically focused liquid and a target surface, is also implicitly solved by the document D1, and thus no common problem is solved by all of the above mentioned independent claims, which is different from that solved by the document D1.

Thus, there is no single common general inventive concept between the above mentioned four independent claims as required by Rule 13.1 PCT.

The subject-matter of independent claim 1 is already known and not inventive on the basis of the disclosure found in the document D1 (see abstract; page 1, paragraph 1; page 3, lines 18-35; page 5, line 29 - page 6, line 6; page 6, line 33 - page 8, line 15; page 14, line 16 - page 15, line 15; page 18, line 29 - page 19, line 10; page 21, line 36



- page 22, line 15; page 27, line 14 - page 22, line 17; figures 1, 5, 13). The requisite unity of invention (Rule 13.1 PCT) therefore no longer exists inasmuch as a technical relationship involving one or more of the same or corresponding special technical (novel and inventive) technical features in the sense of Rule 13.2 PCT does not exist between the subject-matter of the groups of dependent claims.

#### Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. In the letter of 25.05.2001, the applicant argues that the subject matter of claims 1-4 and 8-12 is novel and inventive over the disclosure of D1, in particular that D1 does not disclose an **interaction** of a **hydrodynamically focussed liquid** with the surface over which it flows, nor that the **hydrodynamically focussed liquid** is made to flow in a chosen lateral position within the flow cell.

Insofar as the term "**interaction**" is concerned, no particular limitations can be derived therefrom, as the mere flow of a liquid containing particles over any surface inevitably would produce an interaction, such as friction.

In the same vein, the term "**target**" does not have any delimited meaning either, as long as no specification is referred to as to the precise meaning thereof.

It is the opinion of the International Examining Authority that the document D1 indeed discloses the hydrodynamic focussing of a liquid between two guidance liquids, so that the liquid is made to flow along a pre-determined path through a flow cell, thereby causing it to interact with a surface of the flow cell. See e.g. page 5, lines 29-34; page 6, line 33 - page 7, line 23.

Furthermore, thought not specifically stated in the description of figures 12(a) and 12(b), it would be obvious to the person skilled in the art when studying D1, that the flow device illustrated and generally referred to as (5) would be similar in construction and function to any of the other embodiments described and illustrated in D1, such as that of figure 7; see page 22, line 34 - page 23, line 2.

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Therefore, the embodiment illustrated in figure 12(a) and 12(b) of D1 does indeed disclose a hydrodynamically focussed liquid which is made to interact in a flow cell with a selected assay sites on surface comprising an array of probes, such as DNA

The International Examining Authority therefore maintains its objections regarding lack of novelty as put forward under **point 2** below.

**2.** The application does not meet the requirements of Art. 33(2) PCT in that claims 1-4 and 8-12 lack novelty.

i. D1 discloses a method of hydro-dynamically focussing a liquid stream on a selected region on a target surface by means of two guidance liquid flows and thereby causing an interaction with the selected region of the target surface. The interaction may be a chemical reaction comprising the immobilisation of a nucleotide. Moreover, D1 also discloses Reynolds numbers for the flow channel within the claimed range. See abstract; page 1, paragraph 1; page 3, lines 18-35; page 5, line 29 - page 6, line 6; page 6, line 33 - page 8, line 15; page 14, line 16 - page 15, line 15; page 18, line 29 - page 19, line 10; page 21, line 36 - page 22, line 15; page 27, line 14 - page 22, line 17; figures 1, 5, 13.

ii. D2 discloses a similar method of hydrodynamically focussing a liquid on a selected region of a target surface. See the whole document.

**3.** The subject matter of claims 5-7 and 13-17 appears to be novel and inventive over the available prior art.

i. Neither D1 nor D2 disclose the further covalent binding of an (oligo)nucleotide or an amino acid to one already immobilised on the target surface, nor the immobilising of a first amino acid of a peptide on the target surface. Furthermore, no disclosure is found of intersecting regions.

ii. D3 discloses a method and apparatus for sequentially synthesising oligonucleotides on a support surface by means of flow channels which are alternately placed so as to form intersecting regions. D3 does, however, not disclose the use of hydrodynamically guided flow means. See page 9, line 4- page 10, line 6; figures 4a-4c; figures 7a, 7b.

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iii. None of the available prior art disclose a method wherein a hydrodynamically focussed flow is combined with electro-osmotic flow means.

4. All of claims 1-17 meet the requirements of Art. 33(4) PCT with regard to industrial applicability.

**Re Item VII**

Certain defects in the international application

1. The whole body of the description should be thoroughly revised to comply with the Rule 11.13(m) PCT which requires that the same feature shall be denoted by the same reference sign throughout the application. This is clearly not the case, e.g. feature 64 is described as "outlet" and "driving electrode".

2. Moreover, the whole body of the description should also be thoroughly revised to comply with the Rule 10.2 PCT which requires that the terminology and the signs shall be consistent throughout the application. This is not the case, e.g. for the feature 28 which is variously referred to as "guidance liquid", "guidance stream" and "flow".

3. According to the requirements of Rule 11.13(l) reference signs not appearing in the description shall not appear in the drawings, and vice versa. This requirement is not met in view of the reference sign 64 on page 25, line 30; the reference sign 267 in fig. 5; and the reference sign 23' on page 33, line 17.

**Re Item VIII**

Certain observations on the international application

1. The claims as a whole do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The term "interaction" as used in the claims is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject matter of the claims unclear (Article 6 PCT).

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In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT).

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PJS/P7688WO	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/02578	International filing date (day/month/year) 23/03/2000	(Earliest) Priority Date (day/month/year) 24/03/1999
Applicant  TORSANA BIOSENSOR A/S et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international Search Report consists of a total of 5 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



None of the figures.

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## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-17

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-17

method and apparatus for producing an interaction between a hydrodynamically focused liquid and a selected region of a target surface.

2. Claim : 18

method for producing an interaction between an electrodynamically focused liquid and a selected region of a target surface.

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International Application No

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B01J19/00 G01N15/14 F15C5/00 F15C1/08

According to international Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01J G01N F15C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 10267 A (TECHNICAL UNIVERSITY OF DENMARK) 12 March 1998 (1998-03-12) cited in the application abstract page 1, paragraph 1 page 3, line 18 - line 35 page 5, line 29 -page 6, line 6 page 6, line 33 -page 8, line 2 page 14, line 16 -page 15, line 15 page 18, line 29 -page 19, line 10 page 21, line 36 -page 22, line 15 page 27, line 14 -page 28, line 17 figures 1,5,13 --- -/--	1-4,8-12



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## ° Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*Z\* document member of the same patent family

Date of the actual completion of the international search

7 July 2000

Date of mailing of the international search report

21.09.2000

Name and mailing address of the ISA

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Authorized officer

STEVNSBORG, N



## INTERNATIONAL SEARCH REPORT

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PCT/EP 00/02578

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GERT BLANKENSTEIN ET AL: "MODULAR CONCEPT OF A LABORATORY ON A CHIP FOR CHEMICAL AND BIOCHEMICAL ANALYSIS" BIOSENSORS & BIOELECTRONICS, vol. 13, no. 3/04, 1998, pages 427-438, XP000700154 BARKING, UK ISSN: 0956-5663 cited in the application the whole document	1-4,11
A	--- GERT BLANKENSTEIN ET AL: "FLOW SWITCH FOR ANALYTE INJECTION AND CELL/PARTICLE SORTING" ANALYTICAL METHODS AND INSTRUMENTATION, 1996, pages 82-84-84, XP000865501 NEW YORK, US ISSN: 1063-5246 the whole document	1
A	--- WO 99 05512 A (UNIVERSITY OF WASHINGTON) 4 February 1999 (1999-02-04) abstract	1
A	--- EP 0 916 396 A (AFFYMETRIX, INC.) 19 May 1999 (1999-05-19) page 3, line 47 -page 4, line 21 page 10, line 20 - line 34 figures 7A,7B	2-8,13, 14,16
A	--- WO 98 49344 A (LOCKHEED MARTIN ENERGY RESEARCH CORPORATION) 5 November 1998 (1998-11-05) abstract page 4, line 24 -page 10, line 16 figures 1-4 -----	1-4,11, 13-17

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/02578

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9810267	A	12-03-1998	AU 4113297 A	26-03-1998
			EP 0925494 A	30-06-1999
			NO 991051 A	27-04-1999
-----				
WO 9905512	A	04-02-1999	US 5948684 A	07-09-1999
			AU 5450498 A	16-02-1999
			EP 1002227 A	24-05-2000
-----				
EP 916396	A	19-05-1999	US 5384261 A	24-01-1995
			US 5412087 A	02-05-1995
			EP 0972564 A	19-01-2000
			AU 675054 B	23-01-1997
			AU 3148193 A	15-06-1993
			CA 2124087 A	27-05-1993
			EP 0624059 A	17-11-1994
			JP 7506561 T	20-07-1995
			WO 9309668 A	27-05-1993
			US 6040193 A	21-03-2000
			US 5885837 A	23-03-1999
			US 5677195 A	14-10-1997
			AU 4110793 A	29-11-1993
			WO 9322680 A	11-11-1993
-----				
WO 9849344	A	05-11-1998	NONE	
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From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Smart, Peter J.  
W. H. BECK, GREENER & CO.  
7 Stone Buildings  
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PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year) 16.07.2001

Applicant's or agent's file reference  
PJS/P7688WO

**IMPORTANT NOTIFICATION**

International application No.  
PCT/EP00/02578

International filing date (day/month/year)  
23/03/2000

Priority date (day/month/year)  
24/03/1999

Applicant  
TORSANA BIOSENSOR A/S et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

**4. REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized officer

Dekker, M

Tel.+31 70 340-4046



PCT

From the INTERNATIONAL SEARCHING AUTHORITY

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

To  
W. H. BECK, GREENER & CO.  
Attn. Smart, Peter J.  
7 Stone Buildings  
Lincoln's Inn  
London WC2A 3SZ  
UNITED KINGDOM

Date of mailing  
(day/month/year)

21/09/2000

1/8/02 (12)  
1 P S  
12/21/01

Applicant's or agent's file reference

PJS/P7688W0

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/EP 00/02578

International filing date

(day/month/year)

23/03/2000

Applicant

TORSANA BIOSENSOR A/S et al.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Toñi Muñoz-Manneken

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

**The amendments must be made in the language in which the international application is to be published.**

#### What documents must/may accompany the amendments?

##### **Letter (Section 205(b)):**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

**The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.**

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged,
- (ii) the claim is cancelled,
- (iii) the claim is new,
- (iv) the claim replaces one or more claims as filed,
- (v) the claim is the result of the division of a claim as filed

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

**It must be in the language in which the international application is to be published.**

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### **Consequence if a demand for international preliminary examination has already been filed**

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/PEA/401).

### **Consequence with regard to translation of the international application for entry into the national phase**

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

<b>Date of mailing</b> (day/month/year) 11 January 2001 (11.01.01)	
<b>International application No.</b> PCT/EP00/02578	<b>Applicant's or agent's file reference</b> PJS/P7688WO
<b>International filing date</b> (day/month/year) 23 March 2000 (23.03.00)	<b>Priority date</b> (day/month/year) 24 March 1999 (24.03.99)
<b>Applicant</b> BLANKENSTEIN, Gert et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 17 October 2000 (17.10.00)

☐ in a notice effecting later election filed with the International Bureau on:  
 \_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Zotomayor Telephone No.: (41-22) 338.83.38
---	--

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US97/21258

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G01N 21/64

US CL : 436/172, 177, 180; 422/81

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 436/172, 177, 180; 422/81, 82, 82.08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,894,146 A (GIDDINGS) 16 January 1990, entire document.	1-20
A	US 5,141,651 A (GIDDINGS) 25 August 1992, entire document.	1-20
A	US 5,193,688 A (GIDDINGS) 16 March 1993, entire document.	1-20
A	US 5,389,524 A (LARSEN et al) 14 February 1995, entire document.	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*B* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

02 MARCH 1998

Date of mailing of the international search report

13 MAR 1998

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized Officer

JEFFREY R. SNAY

Telephone No. (703) 308-0651



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/08461

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C12Q 1/68; G01N 33/551, 33/558, 33/569

US CL : 435/6, 283.1, 287.1, 288.2, 288.7; 422/58, 68.1, 82.08; 436/94

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/6, 283.1, 287.1, 288.2, 288.7; 422/58, 68.1, 82.08; 436/94

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, MEDLINE, BIOSIS, CA, DERWENT

search terms: microchannel, microfluidic, microchip, hybridize, probe

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,304,487 A (WILDING et al.) 19 April 1994, cols. 5-9.	1-68
A	US 5,498,392 A (WILDING et al.) 12 March 1996.	1-68
A	WILDING et al. Manipulation and flow of biological fluids in straight channels micromachined in silicon. Clin. Chem. 1994, Vol. 40, No. 1, pages 43-47.	1-68

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*B* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

16 JULY 1998

Date of mailing of the international search report

01 SEP 1998

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

KENNETH R. HORLICK

Telephone No. (703) 308-0196

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK 97/00368

A CLASSIFICATION OF SUBJECT MATTER  
IPC 6 G01N15/14 G01N33/543 B03C1/035

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 G01N B03C B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
----------	--	----------------------

Y	<p>AHN C H ET AL: "A FULLY INTEGRATED MICROMACHINED MAGNETIC PARTICLE MANIPULATOR AND SEPARATOR" PROCEEDING OF THE WORKSHOP ON MICRO ELECTRO MECHANICAL SYSTEMS (MEM, OISO, JAN. 25 - 28, 1994, no. WORKSHOP 7, 25 January 1994, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, pages 91-96, XP000528399 see the whole document</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	<p>1-4,9, 10,12, 17, 20-27, 29,30, 34,35</p>
---	--	--

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

\* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*Z\* document member of the same patent family

Date of the actual completion of the international search

12 December 1997

Date of mailing of the international search report

- 7.01.98

Name and mailing address of the ISA  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel: (+31-70) 340-2040, Tx 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Brison, O

## INTERNATIONAL SEARCH REPORT

 Intern. Application No  
 PCT/DK 97/00368

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
Y	US 3 827 555 A (KAMENSKY L ET AL) 6 August 1974	1-4,9, 10,12, 17, 20-27, 29,30,34
	see the whole document	
X	---	37
Y	US 4 279 345 A (ALLRED JOHN C) 21 July 1981	12
	see the whole document	
	---	
Y	WO 96 09409 A (MILTENYI BIOTECH INC) 28 March 1996	35
	see page 5, line 10 - page 8, line 20	
	---	
Y	US 4 910 148 A (SORENSEN OTTO ET AL) 20 March 1990	36
	see the whole document	
	---	
Y	US 3 560 754 A (KAMENSKY LOUIS A) 2 February 1971	36
	see the whole document	
	---	
X	WO 94 15193 A (SIENNA BIOTECH INC) 7 July 1994	38
	see abstract	
	---	
X	WO 93 22058 A (UNIV PENNSYLVANIA) 11 November 1993	39
	see page 11, line 1-14	
	---	
A	US 5 053 344 A (ZBOROWSKI MACIEJ ET AL) 1 October 1991	1
	see abstract	
	---	
A	US 5 483 469 A (VAN DEN ENGH GER ET AL) 9 January 1996	1
	see the whole document	
	-----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/DK 97/00368

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3827555 A	06-08-74	US 3984307 A	05-10-76
US 4279345 A	21-07-81	NONE	
WO 9609409 A	28-03-96	AU 3593595 A	09-04-96
		CA 2200294 A	28-03-96
		EP 0778899 A	18-06-97
US 4910148 A	20-03-90	NONE	
US 3560754 A	02-02-71	BE 689813 A	02-05-67
		CH 446769 A	
		DE 1598634 A	15-04-71
		FR 1501326 A	29-01-68
		GB 1101063 A	
		NL 6615120 A	18-05-67
		SE 333264 B	08-03-71
WO 9415193 A	07-07-94	AU 670489 B	18-07-96
		AU 5873494 A	19-07-94
		CA 2151060 A	07-07-94
		CN 1092866 A	28-09-94
		EP 0676045 A	11-10-95
		JP 8505231 T	04-06-96
		US 5589401 A	31-12-96
WO 9322058 A	11-11-93	US 5304487 A	19-04-94
		US 5296375 A	22-03-94
		AT 155711 T	15-08-97
		AT 140025 T	15-07-96
		AT 140880 T	15-08-96
		AU 677780 B	08-05-97
		AU 4222393 A	29-11-93
		AU 680195 B	24-07-97
		AU 4222593 A	29-11-93
		AU 677781 B	08-05-97
		AU 4222693 A	29-11-93
		AU 4222793 A	29-11-93
		AU 677197 B	17-04-97
		AU 4223593 A	29-11-93

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: Application No

PCT/DK 97/00368

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9322058 A		CA 2134474 A	11-11-93
		CA 2134475 A	11-11-93
		CA 2134476 A	11-11-93
		CA 2134478 A	11-11-93
		DE 69303483 D	08-08-96
		DE 69303483 T	06-02-97
		DE 69303898 D	05-09-96
		DE 69303898 T	20-02-97
		DE 69312483 D	04-09-97
		EP 0637996 A	15-02-95
		EP 0637997 A	15-02-95
		EP 0639223 A	22-02-95
		EP 0637998 A	15-02-95
		EP 0637999 A	15-02-95
		HK 16897 A	13-02-97
		JP 7506430 T	13-07-95
		JP 7506431 T	13-07-95
		JP 7506256 T	13-07-95
		JP 7506257 T	13-07-95
		JP 7506258 T	13-07-95
		WO 9322053 A	11-11-93
		WO 9322054 A	11-11-93
		WO 9322421 A	11-11-93
		WO 9322055 A	11-11-93
		US 5635358 A	03-06-97
		US 5427946 A	27-06-95
		US 5498392 A	12-03-96
		US 5587128 A	24-12-96
		US 5486335 A	23-01-96
		US 5637469 A	10-06-97
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US 5053344 A	01-10-91	NONE	
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US 5483469 A	09-01-96	NONE	
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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/SE 99/00063

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 G01N21/55 G01N21/05

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01N C23C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 35940 A (CIBA GEIGY AG ;BUDACH WOLFGANG (CH); NEUSCHAEFER DIETER (CH); PAWL) 14 November 1996	1-4,6,7,9,10,17,18,39-42
Y	see page 2, line 5 - line 8 see page 5, line 6 - line 8 see page 5, line 29 - page 6, line 3 see page 6, line 30 - page 7, line 3 see page 11, line 19 - line 26 see page 18, line 21 - page 19, line 5 see page 20, line 22 - page 21, line 27 see page 22, line 10 - line 15 see page 26, line 15 - line 28 see page 32, line 17 - page 33, line 5 see figures 5,6 --- -/--	19,20,43,44

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 April 1999

Date of mailing of the international search report

03/05/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel: (+31-70) 340-2040, Tx 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Navas Montero, E

# INTERNATIONAL SEARCH REPORT

Int. l. Application No

PCT/SE 99/00063

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	WO 97 01087 A (CIBA GEIGY AG ;OROSZLAN PETER (CH); ERBACHER CHRISTOPH (DE); DUVEN) 9 January 1997	21,22, 25-27, 31-33, 36-41 19,20
Y	see page 1, line 1 - line 6 see page 2, line 7 - line 12 see page 5, line 14 - line 20 see page 7, line 24 - page 8, line 2 see page 12, line 5 - line 19 see page 17, line 23 - page 19, line 18 see page 21, line 22 - page 22, line 2 see figures 8,9	
A	---	29,30
Y	WO 96 10178 A (PHARMACIA BIOSENSOR AB ;LOEFAAS STEFAN (SE)) 4 April 1996	43,44
A	see page 1, line 3 - line 6 see page 2, line 18 - line 24 see page 6, line 19 - page 7, line 22	1
A	---	
A	WO 94 27137 A (UNIV UTAH RES FOUND) 24 November 1994 see the whole document -----	1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/SE 99/00063

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9635940 A	14-11-1996	AU 5763296 A CA 2219769 A EP 0824684 A PL 323257 A ZA 9603731 A	29-11-1996 14-11-1996 25-02-1998 16-03-1998 12-11-1996
WO 9701087 A	09-01-1997	AU 6354796 A	22-01-1997
WO 9610178 A	04-04-1996	EP 0784793 A JP 10507126 T	23-07-1997 14-07-1998
WO 9427137 A	24-11-1994	US 5512492 A AU 7311694 A CA 2162996 A EP 0700514 A JP 8510331 T US 5677196 A US 5846842 A	30-04-1996 12-12-1994 24-11-1994 13-03-1996 29-10-1996 14-10-1997 08-12-1998